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AUTHOR	Calcagno, Susan C.; Trinchero, Robert L.
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ABSTRACT

This report is a summary and review of a study on the effects of introducing an independent learning system in low socioeconomic (SES) schools. The report is organized into five sections. The first provides background information on the independent learning system, the research design and student variables of interest. The second section describes the low-SES sample characteristics and student attrition rates. Implementation of the independent learning system in low-SES classes is described in the third section, and results of the research study for low-SES students in the fourth section. A discussion of problems encountered in the study of independent learning in low-SES schools is presented in the summary. (Authors)

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INDEPENDENT LEARNING AND LOW SOCIO-ECONOMIC CLASSROOMS: PROBLEM OF PROGRAM IMPLEMENTATION AND ASSESSMENT

Susan C. Calcagno

Robert L. Trinchero

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Far West Laboratory for Educational Research and Development

1855 FOLSOM STREET • SAN FRANCISCO, CALIFORNIA 94103 •

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The Effective Teacher Education Program of the Far West Laboratory for Educational Research and Development conducted the Independent Learning Study as part of a large scale research effort inquiring into the effects of teachers' use of various instructional skills and strategies. The research outcomes reported herein were obtained through the Independent Learning Study.

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Beatrice A. Ward
Deputy Laboratory Director

INDEPENDENT LEARNING AND LOW SOCIO-ECONOMIC CLASSROOMS: PROBLEMS OF PROGRAM IMPLEMENTATION AND ASSESSMENT

INTRODUCTION

This report is a summary and review of a study on the effects of introducing an independent learning system (ILS) in low socio-economic (SES) schools. The discussion extends beyond the presentation and interpretation of traditional objective measures in a post-mortem attempt to understand the process of implementing and assessing an experimental teaching approach in a low SES school environment. Hindsight has generated an awareness of the inadequacy of restricting attention to the measurement of educational outcomes or products. It has emphasized the necessity for understanding the procedural and operational difficulties which affect the level of treatment implementation in a particular educational milieu.

Data discussed in this report are a subset from an extensive field study conducted in the Los Angeles Unified School District by the Far West Laboratory for Educational Research and Development (Ward, et al., 1977). The purpose of that study was to assess the effects of an inservice training package, Minicourse 15 (Ward, 1973), designed to develop teachers' skills and behaviors for organizing independent learning in their classrooms. While the initial design intended a broad teacher representation from all SES levels, few participants from low SES schools volunteered and the decision was made to treat their data separately and less formally. This report is the result of that decision.

The report is organized into five sections. The first provides background information on the independent learning system, the research design

and student variables of interest. The second section describes the low-SES sample characteristics and student attrition rates. Implementation of the independent learning system in low-SES classes is described in the third section, and results of the research study for low-SES students in the fourth section. A discussion of problems encountered in the study of independent learning in low-SES schools is presented in the summary.

BACKGROUND INFORMATION

A detailed description of the Independent Learning System, the research design, and the measurement instruments is provided in Ward, et al., (1977). General descriptions of these items are presented below to provide a context for discussion of the low-SES sample and the data collected in the low-SES classrooms.

The Independent Learning System

The independent learning system that was implemented and studied is based upon Minicourse 15: Organizing Independent Learning, Intermediate Level, which is a teacher training package developed and tested by the Laboratory. The course trains teachers to install an instructional system that incorporates the principles of independent study and contract learning. As noted in the introductory chapter of the teacher handbook for the minicourse:

> Independent study may be used effectively in almost any organizational structure. Whether the school is graded or nongraded, whether it utilizes team teaching or has predominantly self-contained classrooms, whether students are grouped among and within classrooms by age, ability, or achievement, independent study may be incorporated as one kind of setting within which learning occurs. It is one of the instructional settings which a teacher may use as part of the total format for teaching and learning in the classroom (Ward, 1973, p. 1).

Dr. Ward further characterized independent study as freedom from constant supervision by the teacher:

> Students require skill in self-directed learning, monitoring their own progress, and organizing learning resources for themselves. The independent study situation thus provides the framework for the independent learning process...independent learning is what occurs as a result of the experiences a student has in an independent study situation (Ward, 1973, p. 2).

Minicourse 15 spans a 22-day instructional period and consists of teacher practice in the following skill areas: (1) Assessing student readiness for independent learning; (2) Developing skill in identifying and stating the learning objectives for an independent learning contract; (3) Outlining learning steps to be completed, identifying resources to be used, and establishing deadlines for completing various learning steps; (4) Providing students with reinforcement. The course also provides recommendations and guidelines for introducing independent learning as an integral part of an instructional program.

As part of the larger study, treatment teachers received Minicourse 15 training to assist them in establishing the independent learning system that was to be studied (see next section for discussion of teacher assignment to treatment). Generally, the system required that the teacher and students develop learning contracts that were then carried out independently by the students. (See Appendix for a copy of contract form.)

The Independent Learning Study Research Design

The overall purpose of the Independent Learning Study was to investigate the effects upon student outcomes of training teachers in the use of an independent learning system. As noted above, the system was based on Minicourse 15.

The study was conducted in two phases. During Phase I, teachers assigned to the treatment group received Minicourse 15 training (Spring, 1974). They then implemented the independent learning system in their classrooms during Phase II (1974-75 school year).

The data discussed here were obtained during Phase II of the study. The Phase II research questions were:

1. Does the organization of learning activities in classrooms of teachers who have implemented an independent learning system differ from the organization of classrooms where the system has not been implemented?

2. What are the effects of the independent learning system on student outcomes as measured by traditional achievement instruments in social studies achievement? Work study skills?

3. What are the effects of the independent learning system on student outcomes directly associated with independent study: level of independence? quality of a student product produced independently?

4. What are the effects of the independent learning system on student affective outcomes: attitudes toward teacher, social studies, learning, school? self-concept?

Volunteer teachers were recruited for the entire study from a stratified sample of schools in the Los Angeles Unified School District in the Winter of 1974. Schools were randomly assigned to treatment and control conditions that winter and treatment teachers received Minicourse 15 training during Spring, 1974. As noted above, Phase II data collection occurred during the 1974-75 academic year and control group teachers were given Minicourse 15 training at the end of that school year. Data collection was assigned to a group of seven full-time field workers who were paid by Far West Laboratory. Each field worker had responsibility for specific schools within the study where (s)he administered all student measures and gathered periodic observation data.

Generally, student measures were collected at the beginning (September and October, 1974) and end (April and May, 1975) of the school year. Classroom observation data were collected at three points during the year. Interview data were collected during mid-year as well as Fall and Spring. The observation measures will be discussed in the section describing implementation of the Independent Learning System. A discussion follows of the student measures.

Student Variables and Measures

In order to study the effects upon students of the independent learning system, two types of variables were investigated: (1) outcome variables that might be affected by utilization of independent learning, and (2) antecedent variables--traits and abilities--which might influence the effectiveness of the treatment.

Outcome Variables. The outcome variables included cognitive and affective measures and measures of variables specifically related to independent study. The instruments used are described briefly below. More extensive descriptions of these measures are included in the main ILS Report, Volumes I and III. All measures were administered in the Fall (pre-measure) and in the Spring (post-measure).

Social Studies Achievement. A cognitive test was included to detect changes in social studies achievement. The test was developed for the Far West Laboratory by Westinghouse Learning Corporation to measure social studies achievement as defined by the Los Angeles Unified School District. It was based on the fourth, fifth, and sixth grade social studies objectives of the district. The test consisted of 20 multiple choice items, each addressing a specific social studies objective.

Level of Independence. The independent learning treatment was designed to increase students' skill in working independently, in defining and selecting their own learning tasks, and in using a variety of resources when completing a learning project. To measure the degree to which a student could work independently, a Level of Independence Interview (LOI) was developed by Far West Laboratory. In the LOI interview, a student was presented with a general social studies topic and asked to describe how (s)he would carry out an independent project on this topic. Answers were coded according to the thoroughness and specificity of the response as an independent problem solving approach. The LOI was administered three times: Fall, Winter and Spring.

Student Product Evaluation. Performance on an independent learning task was assessed once, in the Spring, through an evaluation of student products. Due to the time required for the rating process, products from a subsample of the total target student sample were selected for evaluation after all target students had completed and/or had had sufficient time to complete a product (if the work was not yet finished). Only nine low-SES students were included in this evaluation. Since, in our opinion, this number was too small to warrant interpretation, product evaluation results are not presented in this report.

Self-Concept Questionnaire. Self-concept with regard to learning and school behaviors was examined. The Self-Concept Questionnaire contained 20 items from the Sears Self-Concept Inventory. The items covered three areas of self-concept: convergent mental ability, divergent mental ability, and work habits. The scale provided a measure of self-concept in relation to school and learning activities.

Student Attitude Questionnaire. Student attitude was included as an outcome variable on the premise that student attitudes might become more positive as a result of participation in open education programs such as the Independent Learning System. The Student Attitude Questionnaire designed by Far West Laboratory measured the following five affective variables on separate subscales:

1. Attitude toward teacher--student's subjective feelings about teacher behavior especially with respect to the interpersonal relationship of teacher to students (11 items).

2. Attitude toward schooling--student's general orientation toward schooling, independent of a particular school (12 items).

3. Attitude toward learning--student's attitude toward the learning experience, independent of attitude toward school and teachers, as reflected in intellectual curiosity, willingness to study, volunteerism and interest in problem solving (9 items).

4. Attitude toward social studies--student's feelings about the activities and content of instruction in social studies. This particular subject area was included since the treatment was administered in social studies (10 items).

5. Self-concept--student self-evaluation in relation to learning activities (20 items).

Antecedent Variables. The two variables which were used to describe the students prior to their entering the study were verbal ability and student background. In looking at the effects of independent learning via contracting, variance due to general ability and, in particular, verbal ability was viewed as important to control. Students' verbal ability was measured by the verbal meaning section of the Short Test of Educational Ability. This section consisted of 40 vocabulary items suitable for students in grades four through six.

Background information was collected during the Fall administration of the Level of Independence Interview. Information collected included sex, age, grade, number of years at present school, and language(s) spoken other than English.

SAMPLE CHARACTERISTICS AND ATTRITION

Only one low-SES school was included under each experimental condition (treatment and control). All low-SES classes were combination grades. Both schools were drawn from the inner-city area of the Los Angeles community known as Watts. Originally, the treatment school contributed 48 target students, 12 each from four classrooms. The control school provided 24 target students, 12 each from two classrooms.

As can be seen in Table 1, the actual frequency of low-SES students who dropped out of the study was very close to the number dropping out of the mid- and high-SES samples. However, due to the initial size of the student sample at each SES level, attrition rates were considerably higher for the low-SES group than for the mid- and high-SES groups. The grade level by treatment condition attrition rates (.21 for both treatment and control samples) of low-SES students were one-third to seven times greater than mid- or high-SES counterparts. Viewing the entire ILS study sample, attrition was most costly where least affordable. The small number of students remaining in the low-SES sample, plus the fact that only one school was utilized in each experimental condition, precludes representiveness of the low-SES population in the Los Angeles Unified School District.

No distinguishing demographic characteristics were identified in comparing low-SES drop-outs with those who remained. Demographic data

TABLE 1

Student Sample Attrition Rates

	SES	4th Grade Orig. Samp.	4th Grade No. Drop.	4th Grade Final Samp.	4th Grade % Attrit.	5th Grade Orig. Samp.	5th Grade No. Drop.	5th Grade Final Samp.	5th Grade % Attrit.	6th Grade Orig. Samp.	6th Grade No. Drop.	6th Grade Final Samp.	6th Grade % Attrit.	Total Orig. Samp.	Total No. Drop.	Total Final Samp.	Total % Attrit.
Treatment	Low	7	2	5	.29	11	2	9	.18	30	6	24	.20	48	10	38	.21
	Mid	48	5	43	.10	23	3	20	.13	49	7	42	.14	120	15	105	.13
	High	48	3	45	.06	48	2	46	.04	60	6	54	.10	156	11	145	.07
Subtotal		103	10	93	.10	82	7	75	.09	139	19	120	.14	324	36	288	.11
Control	Low	3	2	1	.67	12	2	10	.17	9	1	8	.09	24	5	19	.21
	Mid	49	3	46	.06	59	2	57	.03	13	1	12	.08	121	6	115	.05
	High	60	3	57	.05	72	2	70	.03	83	2	81	.02	215	7	208	.03
Subtotal		112	8	104	.07	143	6	137	.05	105	4	101	.04	360	18	342	.05
Total		215	18	197	.08	225	13	212	.06	244	23	221	.09	684	54	630	.08

for the final sample are presented in Table 2. Sex distribution within grade level is highly disproportionate for grades 5 and 6 since original subject selection balanced sex solely within classroom. Because each of the classes included multiple grade levels, this procedure obviously did not balance the sample by sex on a grade level basis. The range for number of years in attendance at current school hints at some degree of transiency among the sample students.

TABLE 2

Demographic Characteristics
of Final Low-SES Target Sample

Grade	Sex		Age (Years)		No. of Years at School Current School	
	Males	Females	Range	Median	Range	Median
4	3	3	8.8- 9.7	9.1	0-3	2
5	14	5	8.3-11.3	10.0	1-5	4
6	10	22	10.7-12.4	11.0	1-7	5

As noted above, all the low-SES classrooms were composed of combination grade levels. The grade levels of the final student sample by class, are presented in Table 3. The disproportionate cell frequencies are not the result of attrition but the fact that original selection of target students was based on students' scores on the pre-LOI and sex rather than grade level assignment.

The final low-SES student sample (students who participated in the treatment or control classrooms for the entire school year) included 38 treatment students from four classrooms and 19 control students from two classrooms, these students, for the most part, were in grades 5 and 6.

TABLE 3

Frequency Counts of Final
Low-SES Target Student Sample
(Treatment by Grade Level by Classroom)

Experimental Condition	Classroom	Grade 4	Grade 5	Grade 6	Combined
Treatment	04		1	10	11
	05		3	3	6
	06		2	8	10
	07	5	3	3	11
Subtotal		5	9	24	38
Control	01	1	7		8
	02		3	8	11
Subtotal		1	10	8	19
Combined		6	19	32	57

IMPLEMENTATION OF THE INDEPENDENT LEARNING SYSTEM

In order to determine the extent to which independent learning was used in the low-SES classrooms, both treatment and control, the results from field observations and end of study interviews with field observers were examined.

Debriefing Interviews

Debriefing interviews with field observers revealed several problems within the low-SES classrooms. One major problem was the treatment teachers' attitudes toward the study itself. Treatment teachers generally felt the Independent Learning System program was good, but not relevant to low-SES children, whom the teachers viewed as the target of much

irrelevant study. These teachers expressed annoyance with the barrage of researchers intruding in their classrooms and schools, spending inordinate amounts of money on studies that they felt were yielding results with little or no application to their teaching situations. In essence, there was a feeling that the students were being used as guinea pigs and would not benefit directly from the research. One teacher stated that the independent learning contracts were geared toward students with reading skills and since his students had difficulty with reading, they could not contract. As a result, treatment teachers were disillusioned with the study and did not give it their full support.

Observers also felt that Far West Laboratory went into the classrooms too early in the school year. The students didn't know the teachers, the teachers didn't know the students and, as a result, an atmosphere of chaos prevailed. The obtrusiveness of observation and testing may have reinforced attitudes of uncertainty and negativism toward the project and the independent learning curriculum in particular. The more that chaos prevailed, the less independent learning could be implemented. Discipline problems typically found in low-SES schools made it difficult to implement both independent learning and the data collection for the study. At the beginning of the year, the students challenged the testers and interviewers by talking back, stalling for time, and asking obvious questions; i.e., gamesmanship prevailed. This behavior subsided somewhat during the course of the study, but field observers stated that it was a recurring problem.

A study conducted by Moskowitz and Hayman (1976) revealed that the implementation of effective instruction in inner-city schools is won or lost at the beginning of the school year when control of the classroom is critical.

They further stated that control, being directly related to student involvement in the learning process, must be maintained in order to facilitate student participation in classroom activities. For whatever reasons, control of student behavior appeared to be a problem in the low-SES sample in this study.

Field observers and teachers viewed the difficulty level of some student measures as too high, especially for the fourth graders in the low-SES classrooms. Many students leafed through the materials and put down their pencils. A few cried with frustration at not being able to recognize words; other marked fake answers just to get the "test" over with. Field observers felt that the Work Study Skills test, which measured students' knowledge and use of reference materials, and the Social Studies Achievement Test appeared to be the most difficult.

In follow-up to this information, the number of responses left blank by low SES students and the number of scores falling below chance were calculated for three measures: Verbal Ability, Work Study Skills, and Social Studies Achievement. Table 4 reports the results of these analyses.

It appears that the Work Study Skills measure was most difficult. Over half the low-SES students either left at least 50% of the responses blank or obtained very low scores. At least two-thirds of all 4th and 5th graders and half of all 6th graders experienced considerable difficulty with Work Study Skills. Similar analysis of the Verbal Ability test revealed difficulty for 44% of the students with 4th and 5th graders accounting for the majority of the problems. Social Studies Achievement, while apparently not as difficult for the students as Verbal Ability and Work Study Skills, was more of a problem for the 5th graders than for the 4th or 6th graders.

TABLE 4

Verbal Ability, Work Study Skills and Social Studies Achievement
Missing Responses and Scores Below Chance
Low SES Target Student Sample

		Verbal Ability						Work Study Skills						Social Studies Achiev.					
		> 50% Missing Response		Scores Below Chance		Total		> 50% Missing Response		Scores Below Chance		Total		> 50% Missing Response		Scores Below Chance		Total	
Grade	Total Number of Students	n	%*	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
4	6	3**	.50	1**	.16	4	.66	1	.16	3	.50	4	.66	1	.16	1	.16	2	.32
5	19	8	.42	3	.16	11	.58	8	.42	5	.26	13	.68	1	.05	10	.53	11	.58
6	32	6	.19	4	.13	10	.32	4	.13	11	.34	15	.47	5	.16	5	.16	10	.32
Total	57	17	.30	8	.14	25	.44	13	.23	19	.33	32	.56	7	.12	16	.28	23	.40

* Percent of total low-SES student sample at that grade
** Figures report under missing responses and scores below chance are discrete. Figures represent pre-test data.

Relative to the amount of independent learning and social studies instruction in the low-SES classrooms, the field observers reported that one control class (class 01) and two treatment classes (classes 05 and 07) engaged in social studies activities only on the days the teacher was being observed. It was their opinion that, in these instances, the students did not realize they were doing social studies activities. The field observers also expressed uncertainty as to the regularity of social studies lessons for the remaining treatment classes (classes 04 and 06) and the other control class (class 02).

According to the field observers, little independent learning took place in the treatment classrooms. They stated that treatment class 07 was the only class where independent learning contracting occurred. Although social studies was not taught on an ongoing basis in this room, the teacher was enthusiastic about her class and had high expectations of her students. These students produced most of the completed contracts from the low-SES target student sample; one student was reported to have completed seven contracts. However, observation data and student outcome measures reveal no major differences between this class and the other treatment classes.

The observers further stated that treatment class 04 was involved with limited independent learning contracting because the teacher felt that rather than assigning projects (contracts), the students themselves should decide whether or not they wanted to do them. Thus, if the students did not want to work on independent projects, they were not required and/or encouraged to do so. The few students who did do independent projects in this class were felt to be successful. However, contracting was definitely not being done in the way that the study had intended.

Treatment classes 05 and 06 produced few independent projects. The field observers felt negative teacher attitudes and problems with students in these classes precluded involvement in the independent learning system.

Observation Data

Low-SES target students were observed in their classrooms during social studies instruction, early in the school year, mid-year, and during the end of the year. The major purpose of these observations was to determine the extent to which independent learning was being utilized in treatment and non-treatment classrooms through monitoring teacher/student activities and interactions. The following variables were selected to represent the degree to which independent learning was being implemented:

1. The number of adults engaged in an instructional task with one or more students in the classroom. The expectation would be that more adults would increase opportunities for independent learning.

2. The degree to which the students' influence was determining the nature and direction of learning. Ratings of 1-2 indicated situations where the students had little influence over the learning tasks; students carried out teacher assigned tasks. A rating of 3 represented situations where students chose from alternative tasks presented to them by the teacher. Ratings of 4-5 denoted situations where students devised and pursued their own learning tasks.

3. The number of activity groups present in the classroom. All students engaged in the same activity constituted an activity group. The greater the number of activity groups, the greater the opportunity for independent learning.

4. The number of students directly involved with the teacher, that is, the number of students who were intended to receive a particular teacher communication. The fewer the number of students simultaneously engaged by the teacher, the greater the opportunity for independent learning.

5. The activity of the teacher, coded as follows:

   (1) Other--A teacher activity that did not fall into the other categories.

   (2) Consultation--One to one discussion with a student. Generally viewed as facilitating independent learning.

   (3) Discussion/lecture--Verbal interaction with students other than consultation. Generally viewed as not facilitating independent learning.

   (4) Working alone--Teacher working on tasks not directly involving students. Can be facilitative to independent learning.

   (5) Monitoring students--Overseeing activities but not directly involved with any student. Generally facilitative to independent learning.

   (6) Distributing materials/giving directions--Generally, not facilitative to independent learning.

These measures, either singularly or in combination, did not directly measure the extent of independent learning in the classroom. It was possible for high numbers of generally facilitative behavior categories to represent dependent student learning experiences. In addition, the observation variables comprised a very limited perspective on the domain of independent learning experience. As a result, these measures convey only a gross estimate of the likely learning environment.

In interpreting the data that are reported, it should be noted that the above considerations coupled with the limited time sampling of such observations and the possible obtrusiveness of the observation process make speculations on fidelity of treatment speculative.

Each observation (early, mid-year, end of year) required approximately 20 minutes. Two variables, the number of adults and student influence, were rated only once each observation period and reflected an overall estimate.

The number of activity groups, number of students engaged with the teacher, and the teacher's activity were recorded every two minutes; thus 10 observations were made on these variables during each observation period.

Table 5 presents, by class, the number of adults present in the room, the student influence ratings, and percentages reflecting the number of activity groups, the number of students engaged by the teacher and teacher activities. Trends over observation cycles are not systematic, either within particular classes or across classes. The optimal situation might be hypothesized as steadily increasing student influence values and/or independent learning patterns as indicated in the above interpretation of each variable from November through April. No such pattern was found.

In examining the number of adults present in the classroom, both the non-treatment classes had one adult, the teacher, engaged in the instructional activity at times of observation. In contrast, three out of the four treatment classes had more than one adult instructionally active in the classroom for some portion of most observation periods.

The student influence ratings varied across classrooms. Students in control Class 01 had little influence upon the tasks that were assigned. Students in control class 02 appeared to be able to select among alternative learning tasks at the beginning of the school year but moved into a more teacher-directed system as the year progressed.

In the treatmtn classes, the students appeared to be working in settings where they selected among alternative tasks presented by the teacher. Class 05 was more teacher-directed than the other treatment classes. Classes 06 and 07, at certain times, provided some limited opportunity for students to propose their own learning activities.

TABLE 5

Low SES Classroom
Observations by Class and Occasion

	Class	Observation Cycle	Number of Adults	Student Influence	Number of Activity Groups 1	2-4	5-6	7+	Number of Students Engaged by Teacher 0	1-2	3-9	10+	Teacher Activities #2	#3	#4	#5	#6	#1
C		Nov-Dec	1.00	1.00	.90*	.10				.05		.95		.55			.45	
O	01	Feb	1.00	1.00		1.00			.20	.10		.70	.10	.40		.10	.40	
N		Mar-Apr	1.00	1.00	.35	.65			.15	.05	.05	.75	.10	.40		.10	.40	
T																		
R		Nov-Dec	1.00	3.50		.50	.50		.10	.25	.65		.20	.60		.10	.10	
O	02	Feb	1.00	2.00		1.00			.20	.30	.47	.03	.30	.43		.20	.07	
L		Mar-Apr	1.00	1.50	.35	.25	.15	.25	.55	.40	.50		.35	.10	.35	.20		
		Nov-Dec	1.50	3.50		.50	.50		.55	.40	.05		.10	.10	.30		.25	.25
	04	Feb	1.30	2.30		.60	.40		.33	.33	.27	.10	.27	.03	.14	.08	.31	.17
T		Mar-Apr	2.00	3.60		.23	.77		.13	.60	.17	.10	.43	.20		.07	.20	.10
R																		
E		Nov-Dec	1.00	2.00	.25	.65	.05	.05	.20	.10	.40	.25*	.05	.20	.20		.55	
A	05	Feb	1.00	3.60		.62	.38		.03	.10	.42	.42	.05	.17		.22	.47	.07
T		Mar-Apr	1.00	2.00		.36	.64				.76	.24		.53		.03	.38*	
M																		
E		Nov-Dec	1.00	4.00		.70	.30		.40	.20	.20	.20			.30		.60*	
N	06	Feb	1.30	3.00		.60	.40		.03	.57	.37	.30	.47	.33	.03	.06	.03*	
T		Mar-Apr	1.70	3.00		.27	.73		.20	.38	.30	.12	.27	.28	.80	.12	.12	.13
		Nov-Dec	1.50	3.50		1.00			.15	.70	.05	.10	.30	.30		.05	.25	.10
	07	Feb	1.00	2.00	.20	.40	.40		.33	.37	.13	.17	.20	.13	.10	.17	.23	.13
		Mar-Apr	2.00	4.00		.10	.90		.20	.35	.45		.25	.35	.05		.20	.15

* Percentages are based on the total number of observations made during an observation cycle. Missing data on one variable in an observation results in the total of the percentages for that variable to be 90-95% rather than 100%.

Control class 01 had either all students working with the teacher as a large group or 2-4 instructional groups in operation during the observations. The other control class utilized more instructional groups with 2 or more groups generally in operation. In the treatment classes, very little total-class instruction occurred. Generally, the treatment teachers worked with from 2 to 6 activity groups.

The number of students directly engaged by the teacher varied greatly between classes and observation cycles. In general, it appears that treatment teachers spent more time with smaller groups of children than control teachers. This difference is particularly apparent when control class 01, in which the teacher spent at least three fourths of his time with a group of 10 or more children, is compared with treatment classes 04, 06, and 07. The amount of time during which teachers were not directly involved with students appears proportionate among treatment and control groups with teacher 05 spending somewhat less time in this category.

Control teachers, particularly teacher 01, spent the majority of time conducting lectures or discussions and distributing materials. Treatment teachers seemed to be involved with more diverse activities although a good portion of their time was also spent in lecture, discussion, and material distribution. Categories 2 and 5, consulting with and monitoring students, are particularly interesting from an independent learning standpoint. Proportions of time in consultation with students were higher for control teacher 02 and treatment teachers 04, 06, 07 than for control teacher 01 and treatment teacher 05. Only control teacher 02 and treatment teacher 05 spent much time monitoring students' progress.

In summary, there appeared to be some observable differences between the low-SES treatment and control classrooms. While three out of the four

treatment classes had more than one adult active in the room, control classes had only one adult present, the teacher. Treatment classes appeared to be more involved in activities where the students could choose between alternative tasks rather than teacher assigned activities. Treatment classes had more student activity groups; teachers were spending less time lecturing as compared to control classrooms.

RESULTS

To investigate the effects of students' participation in independent learning activities, analyses of student data for the mid- and high-SES study (see Ward, et al., 1977) were performed by grouping classes on the basis of level of implementation of the independent learning system rather than by treatment and control. Classes were regrouped in this way because it was felt a few treatment (trained) teachers had not implemented the system, while some control teachers were, in fact, using an independent learning approach that very closely approximated the system advocated in Minicourse 15. Because of the small number of classes in the low-SES sample and the relatively low level of implementation of independent learning in the treatment classes, analyses of low-SES data did not follow that of the main analyses. Thus, for low-SES students, comparisons are made between treatment and control classes.

Further, student outcome data are reported for sixth grade students only since this was the grade level at which the largest number of target students remained at the end of the school year.*

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* Note, in making this decision to compare only sixth grade data, the control target students are taken from Class 02 only. This is the control class that was much more like the treatment classes than Class 01; a factor which should be considered in interpreting the results. Based on the outcomes of the larger (mid- and high-SES) study, it also should be noted that the independent learning system was found to have less influence upon student outcomes at the sixth grade level than at grades 4 and 5, most particularly grade 4. Given these two factors, the outcomes that are reported are to be expected.

Table 6 reports the pre and post means and standard deviations for each student measure for the treatment and control sixth grade target students. These students came from control class 01 and treatment classes 04, 05, 06, and 07.

The treatment sixth grade target students, on the average, scored lower in verbal ability than the control target students. They also scored lower than the control target students on the fall (pre) measures of Work Study Skills, Social Studies Achievement, Attitude toward Social Studies and Self-Concept as Measured by the self-concept rating scale.

The treatment sixth grade target students in the fall scored higher than the control target students on attitude toward school and learning, self-concept as measured by the questionnaire, and level of independence.

When both mean scores and standard deviations are considered, however, it appears that there is considerable overlap in treatment and control target student pre-measure performance on all the variables of interest in the study.

In terms of post-measure performance, the control sixth grade target students, on the average, maintained their higher scores on Work Study Skills, Social Studies Achievement, Attitude toward Social Studies, and the Self-Concept Scale. They also, on the average, scored higher than the treatment sixth grade target students on Attitude toward School and Learning and they had higher average Level of Independence post and delay scores than the treatment students. The treatment students maintained their higher average score on the self-concept questionnaire.

However, again, when both the mean score and standard deviations for each measure are considered, the groups appear to overlap considerably in performance.

TABLE 6

Student Antecedent and Outcome Variables
Low SES - 6th Grade Target Students

	Treatment (n=24)				Control (n=8)			
	Pre $\bar{X}$	Post $\bar{X}$	Pre SD	Post SD	Pre $\bar{X}$	Post $\bar{X}$	Pre SD	Post SD
ANTECEDENT VARIABLES								
Verbal Ability	12.94		6.35		18.00		9.37	
OUTCOME VARIABLES (general measures)								
Work Study Skills	8.08	10.17	3.39	2.08	11.63	12.60	6.05	2.97
Social Studies Achievement	6.17	6.65	2.24	2.53	9.00	10.38	3.85	3.11
Attitude toward School	31.90	33.94	6.08	7.14	31.37	35.76	5.30	6.35
Attitude toward Learning	28.12	27.82	4.25	3.69	26.01	30.17	3.22	2.20
Attitude toward Social Studies	29.12	28.10	4.16	3.94	29.75	29.25	3.84	5.55
Self-Concept Scale	54.72	55.60	7.07	9.75	55.88	61.00	9.10	7.54
Self-Concept Questionnaire	71.86	73.16	11.31	14.52	69.43	64.36	15.62	19.31

OUTCOME VARIABLE (independent learning oriented)		Treatment $\bar{X}$	Treatment SD	Treatment n	Control $\bar{X}$	Control SD	Control n
LOI Total	Pre	8.7	1.8	24	7.8	2.4	8
	Post	8.6	1.4	16	9.0	1.3	7
	Delay	8.9	1.2	24	9.1	.8	8

These data suggest that in the low-SES classes, there are no significant differences in the performance of the sixth grade treatment and control target students. As noted above, these findings may well have been expected given the similarities in the way the treatment and control classes operated and the apparent difficulty in effecting sixth grade student performance, in general.

In order to provide some means for interpreting the relative performance of low-SES students on the outcome measures, mean scores of sixth grade middle and high-SES treatment and control students from the larger ILS study have been summarized in Table 7. A comparison of respective means in Table 6 and Table 7 suggests that, as might be expected, low-SES students performed substantially lower than their mid- and high-SES counterparts on the cognitive measures, i.e., Verbal Ability, Work Study Skills and Social Studies Achievement. All SES groups scored similarly on the other measures.

SUMMARY AND CONCLUSIONS

The study of independent learning in low-SES schools encountered difficulties from the onset. The fact that only two schools and six teachers were willing to participate was a bellwether of events that followed. While the minimal participation of low-SES schools may have resulted from insufficient recruitment and inadequate publicity as to the nature of the training, most likely the reasons were more complex. Teachers' attitudes toward the additional effort required by participation in such a study and their concerns regarding students' ability to function independently undoubtedly limited the number of volunteers.

According to the field observers for the study, there was some indication among those teachers who agreed to participate that independent learning

TABLE 7

Student Antecedent and Outcome Variables
6th Grade Mid- and High-SES Students*
(n = 192)

Antecedent and Outcome Variables	Pre		Post		Delay	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Verbal Ability	25.13	9.14				
Work Study Skills	16.36	6.11	18.86	5.79		
Social Studies Achievement	12.22	3.53	13.27	3.34		
Attitude toward Teacher	33.76	4.98	31.35	6.11		
Attitude toward School	33.05	8.36	31.19	8.01		
Attitude toward Learning	27.73	4.13	27.78	3.90		
Attitude toward Social Studies	27.02	5.79	26.27	5.79		
Self Concept Scale	58.73	8.43	58.23	7.06		
Self Concept Questionnaire	67.70	14.10	65.52	13.83		
LOI Total	8.19	1.87	9.07	1.61	9.61	1.44

* In this table, data are combined for all treatment and control students in the mid- and high-SES groups.

was not appropriate for their students and their approach to teaching. Louise White in her article discussing effective teachers for inner city schools has expressed a similar sentiment:

> The teacher and the teacher training institution are not alone in failing to respond to learning styles that differ from those of white middle-class students. The school is only a microcosm of a society that professes cultural pluralism, but practices cultural homogeneity and denies rewards to those who are different. (1975, p. 309)

For some participant teachers, and possibly for others who elected not to participate, independent learning may have appeared as a reinforcement of cultural homogeneity. Indeed, one of the primary research questions of the study was to determine the applicability of training across diverse SES settings and, therefore, diverse cultural settings. To do this, sufficient numbers of teachers must be convinced initially of the efficacy of the program before an adequate evaluation can be done. Such did not occur in this study.

A further difficulty in conducting longitudinal studies, such as the Independent Learning Study, with low-SES populations is indicated by the attrition rate of samples over the span of one year. Twenty-one percent of the low-SES students were lost before completion of the study as compared with rates of three to thirteen percent for the higher SES groups. The higher rate of transiency of low-SES students is well documented in the literature, as well as in this study, and must be taken into account in the design of any future research.

The fact that the process and substance of many of the student measures were too difficult for many of the low-SES students also was noted by the field observers. The descriptive statistics for the cognitive measures suggested that low-SES students encountered much greater difficulty on the ability and achievement measures than their middle and high-SES peers. Further, teachers viewed these measures as inappropriate for their students and disruptive to their instructional goals. Therefore, data collection was sometimes accomplished with both teacher and students expending only half-hearted effort. When selecting instruments for use in a low-SES setting, perhaps more attention should be paid to the social basis for consequent

educational problems. The use of the particular cognitive measures in this study may have precipitated some of the less than enthusiastic participation of students and teachers, alike. Hall and Turner (1974), Harber and Bryan (1976) and Richard (1972) have suggested that it is not adequate to propose a dialect difference or different language explanation for lower performance of low-SES students on standard English cognitive measures. They suggest that there are social aspects to language learning which may account for initial lag in reading achievement among low-SES, black children. In their milieu, these students do not see society affording them the opportunities in which standard English is operable.

The limited use of independent learning in both treatment and control low-SES classes has several possible explanations. First, the frequency of observation and kind of information collected may not have accurately reflected the instructional process. For any given class, observations were collected on a maximum of six occasions throughout the year and for only 20 minutes per occasion. The behavioral categories were molar and non-conclusive as descriptors of individualization. More extensive observation with more detailed behavioral categories might have provided greater assurance of the modal classroom process. Secondly, the debriefing data suggest a chaotic state in these classrooms with the implications that much of the teacher's time was devoted to administrative, organizational and disciplinary tasks. Such a state obviously diminishes the time available for teaching in the sense of engaging the student in academic interaction and independent study. Third, related to the second reason, the debriefing data suggest that at least one teacher was not convinced of the educability of some, if not many, of the students. Field observers stated:

> the teacher's attitude was from the point of view of not having complete control over the class and being more

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> the teacher's attitude was from the point of view of not having complete control over the class and being more

> concerned with the students' socioeconomic situation and making excuses why they were not learning in school, such as "Well, you know, the students have to worry about getting beat up on the way home from school." (Excerpt from debriefing interviews, May 22, 1975.)

As noted by Parlett and Hamilton (1976, p. 143): "rarely can 'tidy' results be generalized into an 'untidy' reality." In retrospect, the complex and untidy reality of the low-SES classroom may not have lent itself to the research design that was implemented in the Independent Learning Study.

This, coupled with the findings from the larger ILS study suggesting few changes occur beyond grade 4 that can be attributed to the type of instructional system that is used and from the work of Brophy and Evertson (1974) and Bennett (1976) suggesting that low-SES students function best in direct instruction setting, indicates that the outcomes reported herein were to be expected. Given all the complicating circumstances mentioned above, it is reassuring to find that the students in the treatment classes did as well as those in the control classes.

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APPENDIX

INDEPENDENT LEARNING CONTRACT

Student Name _____

Teacher Name _____

What Is To Be Learned	How Learning To Be Demonstrated

Resources To Be Used _____

_____

_____

Learning Steps	Checkpoint Requirement and Date

Deadline for Completion of Contract _____

Anticipated Activity _____